UPCOMING REVISIONS TO THE MANUFACTURERS= SHIPMENTS, INVENTORIES, AND ORDERS SURVEY

GENERAL

On May 21, 2001, we will release revised monthly data for January 1992 through March 2001 for the Manufacturers= Shipments Inventories, and Orders (M3) survey. The revisions are the result of:

- Retabulating monthly data that were reported under the Standard Industrial Classification (SIC) system to be consistent with the new North American Industry Classification System (NAICS), (visit the Census Bureau NAICS URL at http://www.census.gov/epcd/www/naics.html for more detailed information on the NAICS)

- Benchmarking the shipments and inventory data to the 1997 Economic Census and the 1998 and 1999 Annual Surveys of Manufactures (ASM),

- Benchmarking unfilled orders to the 1999 Unfilled Orders survey and adjusting new orders to be consistent with the benchmarked shipments and unfilled orders data,

- Correcting monthly data for late receipts, reclassification of reported data, and revisions to previously reported data,

- Updating the trading day adjustment factors for the shipments series, and

- Updating the seasonal adjustment factors for all series.

Monthly estimates of manufacturers= shipments, inventories and orders are benchmarked to annual data from the 5-year economic censuses, the annual surveys of manufactures, and special surveys of unfilled orders. Estimates of new orders are derived from the shipments and unfilled orders series. Benchmarking the shipments, inventories and orders historical series to the 1997 Economic Census, the 1998 and 1999 Annual Surveys of Manufactures and the 1999 Unfilled Orders survey is of significant importance because it converts the series from the SIC system to the new NAICS. Section 1, which follows, describes the process of developing the series of annual NAICS benchmarks for 1992 through 1996 to supplement 1997 through 1999 benchmarks. Section 2 describes converting the monthly series from the SIC to NAICS basis. Section 3 highlights assumptions and limitations.

SECTION 1. ANNUAL BENCHMARK ESTIMATES

Value of Shipments

The benchmarking process for these years converted the M3 series to the North American Industry Classification System (NAICS) from the historic Standard Industrial Classification (SIC) System. For this conversion, the first step in the benchmarking process was to establish annual estimates for M3 publication level categories defined in terms of NAICS.

Annual estimates for new NAICS-based publication level categories for M3 were readily available from the 1997 Economic Census, the first year in which NAICS was introduced for data collection, and the 1998 and 1999 Annual Surveys of Manufactures. To establish a longer series for trend analysis and to develop patterns to adjust for seasonal variation required estimates for the NAICS categories before 1997.

Annual estimates for 1992 through 1997 for the NAICS categories were developed by allocating value of shipments of 4-digit SIC industries to 6-digit NAICS industries. To do this, detailed products defined for the Economic Census were assigned to 6-digit NAICS industry codes. From the 1992 and 1997 censuses product tables, we calculated the proportion each product represented of the value of products primary to a 4-digit industry. The percentage allocation representing the products in an industry was applied to the total value of shipments from plants classified in the 4-digit industry. The component values of shipments were aggregated into the assigned 6-digit NAICS industries. This procedure assumes (1) all products primary to an industry are shipped from plants classified in the industry and (2) plants only manufacture products primary to the industry in which the plants are classified.

In the absence of product detail, *product classes* for 1993 through 1996 were assigned to 6-digit NAICS industries. We calculated the proportion of shipments that each *product class* represented of the total value of shipments of products primary to a 4-digit SIC industry. Once again, the percentage allocation representing the product classes in an industry was applied to the total value of shipments from *plants* classified in the 4-digit industry and the component values of shipments were aggregated into the assigned 6-digit NAICS industries. Again, this procedure assumes (1) all products primary to an industry are shipped from plants classified in the industry and (2) plants only manufacture products primary to the industry in which the plants are classified.

The values of shipments for 6-digit NAICS industries were aggregated to M3 publication level categories for 1992 through 1997. Since NAICS data were available for 1997 from the Economic Census, we compared them to the shipments values for 1997 derived from the allocation process. The differences determined from this comparison were used to adjust the allocated category estimates for 1992 through 1996. Since the industry shipments values represent shipments of all products from plants classified in an industry, the adjustment corrects for some of the error associated with the assumptions.

Inventories

Inventory data are collected in the ASM and the Economic Census, but not for products or product classes needed for an allocation. Thus, the same allocations determined from the product shipments series were used to allocate inventories data from 4-digit SIC industries to 6-digit NAICS industries for 1992 through 1997. These 6-digit values were then summed to M3 category levels. As we did with shipments, 1997 NAICS data were analyzed to determine differences from our derived data, and adjustments were made to our category estimates for 1992 to 1996.

Unfilled Orders

Unfilled orders are not collected in the ASM or the Economic Census. The only data available were the survey estimates of unfilled orders for M3 publication categories based on the SIC system. To convert the unfilled orders series to a NAICS basis, we allocated company data reported on an SIC basis to NAICS categories using 1997 product shipments data. This method is further explained in section 2. These allocations, based on the distribution of shipments, were applied to the M3 total unfilled orders values to distribute them into NAICS categories. The NAICS distribution of unfilled orders in December of each year, 1992 through 1999, became the initial benchmark values.

To provide a more accurate measure of the levels of unfilled orders, we conducted a special survey of Unfilled Orders for 1999. The sample for this survey was selected to represent NAICS publication level categories. The survey measures gave us a comparison to evaluate the derived values from the allocation process. However, rather than assume the difference in the 1999 values could be used uniformly to adjust the benchmarks for 1992 through 1998, we instead assumed that the unfilled orders estimates for 1986, the last benchmark survey measure, were true values. We used a wedging process to distribute the difference in the 1999 estimates from 1986 through 1998 proportionally closer to that seen in 1999. The unfilled orders at the end of each year, 1992 through 1999, became the annual benchmark values.

Summary

The 1998 and 1999 Annual Surveys of Manufactures and the 1997 Economic Census provided the NAICS-based benchmarks for shipments and inventories. The 1999 Unfilled Orders Survey provided NAICS-based benchmarks for unfilled orders. The aforementioned allocation process was the basis for developing NAICS-based benchmarks for shipments and inventories for 1992 through 1996 and for unfilled orders for 1992 through 1998.

To apply the benchmarks to the monthly series requires a starting point. The starting point is usually the last month of the year last benchmarked. However, all previous benchmark processes resulted in series benchmarked to SIC categories. To develop a starting point, the same allocation of SIC categories to NAICS categories based on shipments data and developed for unfilled orders, was applied to shipments, inventories and unfilled orders estimates from the M3 survey for

January 1992. These derived estimates were the starting points for the benchmarking application and for the initial conversion of the monthly series to NAICS categories.

SECTION 2. CONVERTING MONTHLY ESTIMATES TO NAICS CATEGORIES

Although companies in the M3 survey reported according to arrangements to provide data for SIC categories, we were able to compare their M3 reports for 1997 with company data reported in the 1997 Economic Census. Based on the comparison, we assigned some companies to NAICS categories. For others, we used the Economic Census product data to allocate company data into NAICS categories. We applied these reassignments and allocations to the history of company data. We then calculated monthly ratios of change from the aggregated company data for shipments, inventories and unfilled orders for each NAICS category. Using the same link-relative methodology as in the monthly survey and the new ratios of change, we began with the January 1992 values distributed into NAICS categories to develop the initial monthly NAICS series.

The resultant series of shipments, inventories and unfilled orders were benchmarked to the annual estimates. Monthly new orders series were derived from the benchmarked values of shipments and unfilled orders series.

SECTION 3. ASSUMPTIONS AND LIMITATIONS

Below we expand on some of the details and we list important limiting assumptions and other caveats relative to the development of the series. We are unable to quantify to what degree the series are affected by these limitations. The first four limitations pertain to the development of annual benchmark values. The remaining limitations relate to the development of the monthly series.

- **$** To develop annual shipments benchmarks for NAICS categories, we attempted to identify the SIC products that belonged to each NAICS industry. This was done on the basis of product descriptions and the NAICS code descriptions. For most product codes this was straightforward, but for many we cannot be certain that we included them in the correct NAICS industry. This affected the levels of the NAICS allocations and the corresponding benchmark levels for NAICS categories. Also, in some instances, products were split among multiple NAICS industries. We made arbitrary decisions (usually equal allocations) in splitting the data among the multiple codes. If the multiple codes fell within the same NAICS category for M3, then the arbitrary split had no effect. If the multiple codes were ***not*** contained within the same NAICS category, then the levels of the NAICS benchmarks were affected. These problems were compounded in ASM years where less detailed product class data were used to develop the allocation factors.

- **$** The allocations of industry shipments from SIC into NAICS industries were based on the distribution of products defined in an industry. The allocation factors were based on **all** contributors to the product shipment data including secondary producers, i.e. establishments classified in industries other than the primary industry. To the extent that manufacturers produce multiple products, the allocation does not represent the product shipments from an industry. When secondary producers contribute significantly to the product data, the allocation

factors may be less reliable. Again, this problem was more pronounced for ASM years, where less detailed product class tables were used in the same manner.

- Inventory data are not collected by product or product classes that allow reallocation into NAICS industries. To allocate total inventory data for an SIC industry among the constituent NAICS industries, we assumed the same allocation factors as for shipments.

- Unfilled orders data are not collected by product or product classes that allow reallocation into NAICS industries. We assumed the same allocation factors as for shipments, except we developed allocations separately for each company. Furthermore, the allocations were applied to monthly M3 unfilled orders data since no annual unfilled orders data are collected in the Census or ASM.

- The monthly data are benchmarked to derived annual levels for NAICS categories. Thus, for 1992-1996 all of the limitations of the annual benchmarks also affect the monthly series.

- To develop the monthly NAICS series, the allocation of product data for 1997 was used to allocate company data into NAICS categories for ***all years,*** 1992 through 2000. This application assumes that a company=s product mix does not change over time. We have less confidence in this assumption the further away we move from 1997. For the years after 1997, we have reported ASM company data to validate our allocations and make necessary adjustments.